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ART UNIT	PAPER NUMBER
3696	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/771,570	LEFEBVRE ET AL.
	Examiner	Art Unit	
	GERALD C. VIZVARY	3696	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2009*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,18-22,24,25,30-34 and 39-41* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-6, 18-22, 24-25, 30-34 & 39-41* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *7/1/2005 & 2/6/2006*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____ .

DETAILED ACTION

Response to Restriction/Election

1.   In the action filed 6/8/2009, the following has occurred: Applicant has responded

to the Restriction/Election filed 4/8/2009. Applicant has elected Species I, combustion

optimization without traverse. Claims 1-6, 18-22, 24-25, 30-34 & 39-41 are presented

for examination.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 1-5 & 24-32 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Based on Supreme Court precedent a method

claim must (1) be tied to another statutory class of invention (such as a particular

apparatus) or (2) transform underlying subject matter (such as an article or materials) to

a different state or thing (see at least *Diamond v.* Diehr, 450 U.S. 175, 184 (1981);

Parker v. Flook, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v.* Benson, 409 U.S. 63, 70

(1972); *Cochrane v.* Deener, 94 U.S. 780, 787-88 (1876)). A method claim that fails to

meet one of the above requirements is not in compliance with the statutory

requirements of 35 U.S.C. 101 for patent eligible subject matter. Here claims 1-5 fail to

meet the above requirements since there is not a sufficient tie to another statutory class.

In performing the steps of claims 1-5 & 24-32, there is no requirement that a machine be used. Therefore, the claimed subject matter may be performed using only human intelligence, which has recently been held to be non-statutory. Furthermore, process claims reciting abstract ideas are patentable only if the process involves one of the other statutory classes of subject matter (i.e. a machine, manufacture, or composition of matter). In re Comiskey, No. 2006-1286, (Fed. Cir. Sep. 20, 2007), 17-21.

Claims 4, 5 & 30 are rejected under 35 USC § 101. 35 USC 101 requires that in order to be patentable the invention must be a "new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" (emphasis added). Applicant's claim 4 & 5 mentioned above is intended to embrace or overlap two different statutory classes of invention as set forth in 35 USC 101. The claims begin by discussing a method (ex. preamble of claim 5), the body of the claim discusses the specifics of the process management module, and subsequently the claim then deals with the specifics of a method (the steps) executed by the module (see above rejection of claims under 35 USC 112, second paragraph, for specific details regarding this issue). "A claim of this type is precluded by the express language of 35 USC 101 which is drafted so as to set forth the statutory classes of invention in the alternative only", Ex parte Lyell (17 USPQ2d 1548).

Claim 22 is rejected under 35 USC § 101. The claim invention fails to provide patentable utility.

Claim Rejections - 35 USC § 112 1st Paragraph

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. a "first process of a fossil fuel power plant" cannot be an "optimization".

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Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. "mill biases", "SAD", and "cleanliness" cannot be a "process".

Claim 32 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. "heat rate (HR), MW, NOx, NH3, SO, limestone, emission credits, and fuel costs" cannot be "processes".

Claim 34 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. "boiler losses, boiler NOx and boiler SOx " cannot be "processes".

Claim 41 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. "heat rate (HR), MW, NOx, NH3, SO, limestone, emission credits, and fuel costs "cannot be "processes".

Claim Rejections - 35 USC § 112 2nd Paragraph

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 USC § 112 2nd paragraph. The terms "network", "first input", "first process", "with respect to", "a first process", "a second process", "indicative of", "plurality of inputs and outputs", "chained output", "contributes to", "global output", "credit assignment", "differentiable model", "using", "applying", "obtaining" & "local credit assignment" in claim 1 are unclear and render the claim indefinite. The terms are not defined by the claim, and the specification does not provide a standard for ascertaining

the meaning and one of ordinary skill in the art would not be reasonably apprised of the

scope of the invention or if at the time the application was filed, had possession of the

claimed invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for

omitting essential steps, such omission amounting to a gap between the steps. See

MPEP § 2172.01. The omitted steps are: how a credit assignment is obtained, how

indication of generated profit, how a "first-order differentiable model" is used.

Claim 2 is rejected under 35 USC § 112 2nd paragraph. The term "differentiable model"

is not defined by the claim, and the specification does not provide a standard for

ascertaining the meaning and one of ordinary skill in the art would not be reasonably

apprised of the scope of the invention or if at the time the application was filed, had

possession of the claimed invention.

Claim 3 is rejected under 35 USC § 112 2nd paragraph. The terms "differentiable

model" & "first principles model" are not defined by the claim, and the specification

does not provide a standard for ascertaining the meaning and one of ordinary skill in the

art would not be reasonably apprised of the scope of the invention or if at the time the

application was filed, had possession of the claimed invention.

Claim 4 is rejected under 35 USC § 112 2nd paragraph. The terms "process

management module" & "credit assignment" are not defined by the claim, and the

specification does not provide a standard for ascertaining the meaning and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention or if at the time the application was filed, had possession of the claimed invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: how the first process is managed by a process management module and how the credit assignment of the first input is determined.

Claim 5 is rejected under 35 USC § 112 2nd paragraph. The terms "process management module", "second program", "a network" & "local credit assignment" are not defined by the claim, and the specification does not provide a standard for ascertaining the meaning and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention or if at the time the application was filed, had possession of the claimed invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: how the local credit is transmitted over a network and how the second program computes credit assignments.

Claim 18 is rejected under 35 USC § 112 2nd paragraph. The terms "residing", "for use in", "analyzing", "chained output", "global output", "indicative of", "generated by", "credit assignment", "with respect to", "indicative of", "obtain a credit assignment", applying a chain rule", "using the credit assignment", "differentiable model" & "determine a credit" are not defined by the claim, and the specification does not provide a standard for ascertaining the meaning and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention or if at the time the application was filed, had possession of the claimed invention

Claim 19 is rejected under 35 USC § 112 2nd paragraph. The term "differentiable model" is not defined by the claim, and the specification does not provide a standard for ascertaining the meaning and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention or if at the time the application was filed, had possession of the claimed invention.

Claim 20 is rejected under 35 USC § 112 2nd paragraph. The terms "differentiable model" & "first principles model" are not defined by the claim, and the specification does not provide a standard for ascertaining the meaning and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention or if at the time the application was filed, had possession of the claimed invention.

Claim 22 is rejected under 35 USC § 112 2nd paragraph. The term "can be adapted" in claim 22 is a relative term which renders the claim indefinite. The term "can be adapted" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 24 & 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant fails to explain how a "first process of a fossil fuel power plant" can be an "optimization"

Claims 24 & 33 are rejected under 35 USC § 112 2nd Paragraph. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74

(Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 24 recites the broad recitation first and second processes of the fossil fuel power plant, and the claim also recites combustion optimization, sootblowing optimization, boiler performance optimization, selective catalytic reduction (SCR) optimization, flue gas desulfurization (FGD) optimization, and profit optimization which is the narrower statement of the range/limitation.

Claim 31 is rejected under 35 USC § 112 2nd paragraph. The term "global output" in claim 31 is unclear and renders the claim indefinite. The term "can be adapted" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention

Claim 33 is rejected under 35 USC § 112 2nd paragraph. The term "optimization" in claim 33 renders the claim indefinite. The term "can be adapted" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention

Claim 34 is rejected under 35 USC § 112 2nd paragraph. The terms "profit optimization, global output & indicative of" in claim 40 are unclear and render the claim indefinite.

The term "can be adapted" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention

Claim 39 is rejected under 35 USC § 112 2nd paragraph. The terms "profit optimization, global output & indicative of" in claim 40 are unclear and render the claim indefinite. The term "can be adapted" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention

Claim 40 is rejected under 35 USC § 112 2nd paragraph. The terms "profit optimization, global output & indicative of" in claim 40 are unclear and render the claim indefinite. The term "can be adapted" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 18-22, 24-25, 30-34, and 39-41 rejected under 35 U.S.C. 103(a) as being

unpatentable over Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454

B1.

As per claim 1 (currently amended) Soestbergen US 2002/0143693 A1 discloses a

network of interconnected ~~business~~ processes associated with operation of a fossil fuel

power plant, a method for assigning credit to a first input of a first process of the fossil

fuel power plant with respect to a global output of the network indicative of a profit

generated by the fossil fuel power plant, the first process having a plurality of inputs and

outputs, at least one of said outputs being a chained output that is an input to a second

process of the fossil fuel power plant ~~in the network~~ and contributes to the global output,

the method comprising:

obtaining a credit assignment for each of the chained outputs of the first process of the

fossil fuel power plant with respect to the global output of the network indicative of the

profit generated by the fossil fuel power plant; ("The present invention relates to a

method and system for the banking and trading of emission reduction credits (ERC's).

Specifically, the invention relates to a method and system for a global online venue for

the issuing of ERC's to renewable energy systems, for their reduction or their need for

fossil fuels, and the transferring of ERC's to systems in need of ERC's." Soestbergen

US 2002/0143693 A1 ¶ [0004])

Soestbergen US 2002/0143693 A1 fails to explicitly teach

using a first-order differentiable model of the first process <u>of the fossil fuel power</u> plant

to derive a local credit assignment for the first input; and

applying a chain rule for ordered partial derivatives using the first-order differentiable

model, the local credit assignment for the first input, and the credit assignments for the

chained outputs of the first process with respect to the global output to assign credit to

the first input with respect to the global output of the network.

Werbos US 6,532,454 B1 teaches "BTT [26] can be used to reduce the cost of

computing exact derivatives through any feedforward differentiable system, not just

neural networks." (Werbos US 6532454 B1 col. 4, lines 47-49) and "This is not a

complete description of the problem, because it does not specify how to compute the

derivatives that appear in equation 21. This is not just a matter of computation; there is

also a need to specify which partial derivatives or gradient are used." (Werbos US

6,532,454 B1 col. 20, lines 25-29)

It would have been obvious to one of ordinary skill in the art at the time of the invention

to include differential models as taught by Werbos US 6,532,454 B1 in the system of

Soestbergen US 2002/0143693 A1, for the purpose of credit assignment calculation,

since the claimed invention is merely a combination of old elements, and in the

combination each element merely would have performed the same function as it did

separately, and one of ordinary skill in the art would have recognized that the results of

the combination were predictable.

As per claim 2, Examiner notes that the recitation "the first-order differentiable model is

a neural network" has not been given patentable weight because the intended use is not

functionally related to the method steps. Thus, this nonfunctional descriptive material

will not distinguish the claimed invention from the prior art in terms of patentability, see

In re Gulack, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*,

32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994). Additionally, Applicant is requested

to explain how a neural network constitutes a differentiable model.

As per claim 3, Examiner notes that the recitation "the first-order differentiable model is

a first-principles model" has not been given patentable weight because the intended use

is not functionally related to the method steps. Thus, this nonfunctional descriptive

material will not distinguish the claimed invention from the prior art in terms of

patentability, see *In re Gulack*, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir.

1983); *In re Lowry*, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

As per 4 (original) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454

B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is managed

by a first process management module and the first process management module

determines the credit assignment of the first input. ("The Exchange Module of the

subject invention is an online carbon credit trading function for carbon credit

speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

As per 5 (original) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is managed by a first process management module and the first process management module transmits the local credit assignment over a network to a second program that computes the credit assignment for the first input. ("The Exchange Module of the subject invention is an online carbon credit trading function for carbon credit speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

As per 18 (currently amended) A computer program product residing on a computer readable medium for use in analyzing a first business process of a fossil fuel power plant, the first process having a plurality of inputs and at least one output, at least one of said outputs being a chained output that is an input to a second process in the network and contributes to [[the]] a global output indicative of a profit generated by the fossil fuel power plant, the computer program product containing instructions for causing a computer to:

obtain a credit assignment for each of the chained outputs of the first process of the fossil fuel power plant with respect to the global output indicative of the profit generated by the fossil fuel power plant using an application program interface ("The present invention relates to a method and system for the banking and trading of emission reduction credits (ERC's). Specifically, the invention relates to a method and system for

a global online venue for the issuing of ERC's to renewable energy systems, for their reduction or their need for fossil fuels, and the transferring of ERC's to systems in need of ERC's." Soestbergen US 2002/0143693 A1 ¶ [0004]) and "As a computer system, part of the invention generally includes a database and a processor unit. The processor unit operates to receive information regarding emission output or emissions reduction methods utilized, analyzing the received information to generate emissions reports stating the amount of ERC's needed or the ERC's available for trade. The output may include print or electronic media." Soestbergen US 2002/0143693 A1 ¶ [0020]);

Soestbergen US 2002/0143693 A1 fails to explicitly teach obtaining a first-order-differentiable model of the first process of the fossil fuel power plant; and apply a chain rule for ordered partial derivatives to the first-order-differentiable model using the credit assignments for the chained outputs of the first process with respect to the global output to determine a credit of the first input with respect to the global output.

Werbos US 6,532,454 B1 teaches "BTT [26] can be used to reduce the cost of computing exact derivatives through any feedforward differentiable system, not just neural networks." (Werbos US 6532454 B1 col. 4, lines 47-49) and "This is not a complete description of the problem, because it does not specify how to compute the derivatives that appear in equation 21. This is not just a matter of computation; there is also a need to specify which partial derivatives or gradient are used." (Werbos US 6,532,454 B1 col. 20, lines 25-29)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include differential models as taught by Werbos US 6,532,454 B1 in the system of

Soestbergen US 2002/0143693 A1, for the purpose of credit assignment calculation, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 19, Examiner notes that the recitation "the first-order-differentiable model is a neural network" has not been given patentable weight because the intended use is not functionally related to the method steps. Thus, this nonfunctional descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see In re Gulack, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); In re Lowry, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

As per claim 20, Examiner notes that the recitation "the first-order- differentiable model is a first-principles model" has not been given patentable weight because the intended use is not functionally related to the method steps. Thus, this nonfunctional descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see In re Gulack, 703 F. 2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); In re Lowry, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

As per claim 22 (original) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 fails to explicitly teach that the first-order-differentiable model can be adapted.

Werbos US 6,532,454 B1 teaches "Adaptive control" [1-3] has often been viewed as a tool for addressing the second type of uncertainty--uncertainty about drifting plant parameters." (Werbos US 6,532,454 B1 col. 3, lines 7-9)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include adaptive control as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of addressing uncertainty in plant parameter drift, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 24 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

wherein said first and second processes of the fossil fuel power plant are selected from the group consisting of the following processes: combustion optimization, sootblowing optimization, boiler performance optimization, selective catalytic reduction (SCR) optimization, flue gas desulfurization (FGD) optimization, and profit optimization. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For

example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 25 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

Soestbergen US 2002/0143693 A1 further discloses that the first process is combustion optimization, said first input selected from the group consisting of: O2 trim, over fire air (OFA), mill biases, SAD, and cleanliness; and an output of the first process is selected from the group consisting of: boiler losses, boiler NOx and boiler SOx. ("As a result, emissions trading was introduced as a method to control the global production of

greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 30 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 1.

wherein the first process is managed by a first process management module, wherein the first management module is selected from the group consisting of: a module for

optimizing combustion; a module for optimizing sootblowing; a module for optimizing

boiler performance; a module for optimizing selective catalytic reduction (SCR); and a

module for optimizing flue gas desulfurization (FGD). ("The Exchange Module of the

subject invention is an online carbon credit trading function for carbon credit

speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target

problem, a common family of static optimization problems, and describes a way to

stabilize large-scale economic equilibrium models, such as the old long-term energy

model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention

to include optimization models as taught by Werbos US 6,532,454 B1 in the system of

Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance,

since the claimed invention is merely a combination of old elements, and in the

combination each element merely would have performed the same function as it did

separately, and one of ordinary skill in the art would have recognized that the results of

the combination were predictable.

As per claim 31 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US

6,532,454 B1 teaches a method of claim 1.

 wherein said interconnected processes include a third process that is profit

optimization, the third process having a plurality of inputs and an output that is said

global output of the network indicative of the profit generated by the fossil fuel power plant. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

As per claim 32 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a method of claim 31.

Soestbergen US 2002/0143693 A1 further discloses that an input of said third process is selected from the group consisting of: heat rate (HR), MW, NOx, NH3, SO, limestone, emission credits, and fuel costs. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

As per claim 33 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US

6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that said first and second

processes of the fossil fuel power plant are selected from the group consisting of the

following processes: combustion optimization, sootblowing optimization, boiler

performance optimization, selective catalytic reduction (SCR) optimization, flue gas

desulfurization (FGD) optimization, and profit optimization. ("As a result, emissions

trading was introduced as a method to control the global production of greenhouse

gases. As proposed, emissions trading does not mean an exemption from emissions

reduction, but rather the trade of ERC's from one location to another. For example, a

country with a substantial amount of annual winds may construct wind turbines to

generate electricity, thereby receiving ERC's for the reduction in emissions. A country

with excessive emissions may purchase ERC's from another country to offset their

excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target

problem, a common family of static optimization problems, and describes a way to

stabilize large-scale economic equilibrium models, such as the old long-term energy

model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention

to include optimization models as taught by Werbos US 6,532,454 B1 in the system of

Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 34 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that the first process is combustion optimization, said first input selected from the group consisting of: O2 trim, over fire air (OFA), mill biases, SAD, and cleanliness; and an output of the first process is selected from the group consisting of: boiler losses, boiler NOx and boiler SOx. ("As a result, emissions trading was introduced as a method to control the global production of greenhouse gases. As proposed, emissions trading does not mean an exemption from emissions reduction, but rather the trade of ERC's from one location to another. For example, a country with a substantial amount of annual winds may construct wind turbines to generate electricity, thereby receiving ERC's for the reduction in emissions. A country with excessive emissions may purchase ERC's from another country to offset their excessive emissions." Soestbergen US 2002/0143693 A1 ¶ [0007])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to

stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 39 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that the first process is managed by a first process management module, wherein the first management module is selected from the group consisting of: a module for optimizing combustion; a module for optimizing sootblowing; a module for optimizing boiler performance; a module for optimizing selective catalytic reduction (SCR); and a module for optimizing flue gas desulfurization (FGD). ("The Exchange Module of the subject invention is an online carbon credit trading function for carbon credit speculation." Soestbergen US 2002/0143693 A1 ¶ [0014])

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to stabilize large-scale economic equilibrium models, such as the old long-term energy model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include optimization models as taught by Werbos US 6,532,454 B1 in the system of Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 40 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US 6,532,454 B1 teaches a computer program product of claim 18.

Soestbergen US 2002/0143693 A1 further discloses that said interconnected processes include a third process that is profit optimization, the third process having a plurality of inputs and an output that is said global output of the network indicative of the profit generated by the fossil fuel power plant.

Soestbergen US 2002/0143693 A1 fails to explicitly teach optimization.

Werbos US 6,532,454 B1 teaches "It also addresses the Generalized Moving Target problem, a common family of static optimization problems, and describes a way to

stabilize large-scale economic equilibrium models, such as the old long-term energy

model of DOE." (Werbos US 6,532,454 B1 Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention

to include optimization models as taught by Werbos US 6,532,454 B1 in the system of

Soestbergen US 2002/0143693 A1, for the purpose of obtaining optimal performance,

since the claimed invention is merely a combination of old elements, and in the

combination each element merely would have performed the same function as it did

separately, and one of ordinary skill in the art would have recognized that the results of

the combination were predictable.

As per claim 41 (new) Soestbergen US 2002/0143693 A1 in view of Werbos US

6,532,454 B1 teaches a computer program product of claim 40.

Soestbergen US 2002/0143693 A1 further discloses that an input of said third process

is selected from the group consisting of: heat rate (HR), MW, NOx, NH3, SO, limestone,

emission credits, and fuel costs. ("As a result, emissions trading was introduced as a

method to control the global production of greenhouse gases. As proposed, emissions

trading does not mean an exemption from emissions reduction, but rather the trade of

ERC's from one location to another. For example, a country with a substantial amount of

annual winds may construct wind turbines to generate electricity, thereby receiving

ERC's for the reduction in emissions. A country with excessive emissions may purchase

ERC's from another country to offset their excessive emissions." Soestbergen US

2002/0143693 A1 ¶ [0007])

Conclusion

6.   The following is prior art made of record and not relied upon is considered

pertinent to applicant's disclosure:

Hansen (US 5,704,011) teaches training and optimizing a neural network for use in

controlling multivariable nonlinear processes. The neural network can be used as a

controller generating manipulated variables for directly controlling the process or as part

of a controller structure generating predicted process outputs.

Hartman (US 6,725,208 B1) teaches Bayesian neural networks for optimization and

control.

Boulet (US 5,621,863) teaches a neural network comprised of a plurality of neuron

circuits, that generates local result signals, e.g. of the fire type, and a local output signal

of the distance or category type.

Eder (US 2001/0041996 A1) teaches an automated system and method for measuring

the performance of elements of a business enterprise and for valuing said elements on

a specified valuation date. The performance of the elements is calculated using

composite variables. Predictive models are then used to determine the correlation

between the element performance and the enterprise value drivers, revenue, expenses
and changes in capital.

Negishi (US 5,444,819) teaches an economic phenomenon predicting and/or analyzing
system using a neural network.

7.   Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Gerald C. Vizvary whose telephone number is 571-270-
3268. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Abdi Kambiz can be reached on 571-272-6702. The fax phone number for
the organization where this application or proceeding is assigned is 571-270-4268.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system.   Status information for
published applications may be obtained from either Private PAIR or Public PAIR.
Status information for unpublished applications is available through Private PAIR only.
For more information about the PAIR system, see http://pair-direct.uspto.gov. Should
you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a
USPTO Customer Service Representative or access to the automated information
system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/THOMAS A DIXON/
Supervisory Patent Examiner

Gerald Vizvary
Patent Examiner, A.U. 3696
September 28, 2009